

What is claimed is:

1. A method of designing a centerline for a seat back of a seat assembly using a design manikin having a hip point and a torso line, the method comprising the steps of:

defining a lumbar apex reference point above the hip point along the torso line;

defining a lumbar shape reference circle behind the torso line and spaced apart therefrom;

creating a forward lumbar prominence line parallel to the torso line and tangential to the lumbar shape reference circle;

creating a rearward lumbar prominence line parallel to the forward lumbar prominence line and spaced rearward therefrom; and

shaping a centerline for the seat back incorporating the forward and rearward lumbar prominence lines and the lumbar shape reference circle.

2. A method as set forth in claim 1 further including the step of creating a rearward lumbar apex reference line extending rearward from the lumbar apex reference point to a point perpendicular to and distant from the torso line.

3. A method as set forth in claim 2 including the step of creating a lumbar shape reference circle having a center located along the rearward lumbar apex reference line.

4. A method as set forth in claim 3 wherein the step of creating the forward lumbar prominence line includes the step of positioning the forward lumbar prominence line tangentially with the lumbar shape reference circle.

5. A method as set forth in claim 4 including the step of orienting the rearward lumbar prominence line perpendicular to the rearward lumbar apex reference line wherein the rearward lumbar prominence line and the rearward lumbar apex reference line intersect at an interior point interior of the lumbar shape reference circle.

6. A method as set forth in claim 5 further including the step of defining a seat cushion contour intersecting the lumbar shape reference circle below the hip point.

7. A method as set forth in claim 6 wherein the step of shaping the centerline includes the step of extending the centerline along the lumbar shape reference circle near the seat cushion contour.

8. A method as set forth in claim 7 wherein the step of shaping the centerline further includes the step of influencing the centerline with the lumbar shape reference circle and the rearward lumbar prominence line at a first location defined by a first intersection of the lumbar shape reference and the rearward lumbar prominence line.

9. A method as set forth in claim 8 wherein the step of shaping the centerline also includes the step of influencing the centerline with the lumbar shape reference circle and the seat cushion contour at a second location defined by a second intersection of the lumbar shape reference circle and the seat cushion contour.

10. A method as set forth in claim 9 wherein the step of shaping the centerline further includes the step of extending the centerline substantially along the rearward lumbar prominence line to a centerline end point at a final location spaced apart from and above the lumbar shape reference circle.

11. A method for shaping a seat back of a seat assembly having a seat back face and two side bolsters using a design manikin having a hip point and a torso line, the method comprising the steps of:

defining a lumbar apex reference point above the hip point along the torso line;

defining an apex circle, having an apex circle radius perpendicular to the torso line and containing the lumbar apex reference point;

defining an apex centerline for shaping an apex central portion of the seat back face;

positioning the apex centerline such that it abuts the apex circle, the apex centerline defining a contour profile;

defining outer apex contour lines for shaping portions of the seat back face spaced from the central portion and having contour profiles equal to the apex centerline contour profile; and

positioning outer apex contour lines on either side of the apex centerline parallel thereto and intersecting the apex circle equidistantly from the apex centerline.

12. A method as set forth in claim 11 further including the step of defining inner apex contour lines having contour profiles equal to the apex centerline contour profile.

13. A method as set forth in claim 12 further including the step of positioning the inner apex contour lines on either side of the apex centerline along the apex circle parallel to the apex centerline.

14. A method as set forth in claim 13 further including the step of placing the inner apex contour lines between the apex centerline and the outer apex contour lines.

15. A method as set forth in claim 14 further including the step of shaping an apex horizontal contour incorporating a portion of the apex circle.

16. A method as set forth in claim 15 including the step of defining the portion of the apex circle as extending between the apex contour lines.

17. A method as set forth in claim 16 further including the step of defining a lower circle perpendicular to the torso line containing the hip point and having a lower circle radius greater than the apex circle radius.

18. A method as set forth in claim 17 further including the step of defining a lower centerline for shaping a lower central portion of the seat back face.

19. A method as set forth in claim 18 further including the step of positioning the lower centerline such that it intersects the lower circle, the lower centerline defining a lower contour profile.

20. A method as set forth in claim 19 further including the step of defining outer lower contour lines for shaping portions of the seat back face having lower contour profiles equal to the lower centerline contour profile.

21. A method as set forth in claim 20 further including the step of positioning outer lower contour lines on either side of the lower centerline and intersecting the lower circle equidistantly from the lower centerline.

22. A method as set forth in claim 21 including the step of defining inner lower contour lines having lower contour profiles equal to the lower centerline contour profile.

23. A method as set forth in claim 22 including the step of positioning the inner lower contour lines on either side of the lower centerline along the lower circle parallel to the lower centerline.

24. A method as set forth in claim 23 including the step of shaping a lower horizontal contour incorporating a portion of the lower circle.

25. A method as set forth in claim 24 including the step of defining the portion of the lower circle as extending between the lower contour lines.

26. A method as set forth in claim 25 further including the step of defining an upper circle perpendicular to the torso line vertically above the lumbar apex reference point and having an upper circle radius greater than the lower circle radius.

27. A method as set forth in claim 26 further including the step of defining an upper centerline for shaping an upper central portion of the seat back face.

28. A method as set forth in claim 27 further including the step of positioning the upper centerline such that it intersects the upper circle, the upper centerline defining an upper contour profile.

29. A method as set forth in claim 28 further including the step of defining outer upper contour lines for shaping portions of the seat back face having upper contour profiles equal to the upper centerline contour profile.

30. A method as set forth in claim 29 further including the step of positioning outer upper contour lines on either side of the upper centerline and intersecting the upper circle equidistantly from the upper centerline.

31. A method as set forth in claim 30 including the step of defining inner upper contour lines having upper contour profiles equal to the upper centerline contour profile.

32. A method as set forth in claim 31 including the step of positioning the inner upper contour lines on either side of the upper centerline along the upper circle parallel to the upper centerline.

33. A method as set forth in claim 32 including the step of shaping an upper horizontal contour incorporating a portion of the upper circle.

34. A method as set forth in claim 33 including the step of defining the portion of the upper circle as extending between the upper contour lines.

35. A method as set forth in claim 34 including the step of joining a first lower point defined by a first lower intersection of the lower horizontal contour and an outer lower contour to a first apex point defined by a first apex intersection of the

apex horizontal contour and an outer apex contour, a second lower point defined by a second lower intersection of the lower horizontal contour and the lower centerline to a second apex point defined by a second apex intersection of the apex horizontal contour and the apex centerline, and a third lower point defined by a third lower intersection of the lower horizontal contour and an outer lower contour to a third apex point defined by a third apex intersection of the apex horizontal contour and an outer apex contour, to define an overall seatback contour.

36. A method as set forth in claim 35 further including the step of joining the first apex point to a first upper point defined by a first upper intersection of the upper horizontal contour and an outer upper contour, the second apex point to a second upper point defined by a second upper intersection of the upper horizontal contour and the upper centerline, and the third apex point to a third upper point defined by a third upper intersection of the upper horizontal contour and an outer upper contour, to further define the overall seatback contour.

37. A method as set forth in claim 36 wherein the outer apex contour lines, the outer lower contour lines, and the outer upper contour lines define the width of the portion of the seat back face.

38. A method as set forth in claim 37 including the step of shaping an overall horizontal contour incorporating the apex and lower and upper horizontal contours thereby defining a surface of a portion of the seat back face.

39. A method as set forth in claim 38 including the step of creating an apex bolster line extending between the intersection of the outer apex contour lines and the apex horizontal contour.

40. A method as set forth in claim 39 including the step of creating apex bolster reference lines extending angularly forward from an intersection of the outer apex contour lines and the apex horizontal contour in a plane perpendicular to the apex bolster line and containing the apex horizontal contour.

41. A method as set forth in claim 40 further including the step of creating a first line parallel to the apex bolster line and spaced forwardly therefrom.

42. A method as set forth in claim 41 further including the step of creating a second line parallel to the first line and spaced forwardly therefrom.

43. A method as set forth in claim 42 further including the step of shaping the apex bolster contours incorporating a portion of the apex bolster reference lines.

44. A method as set forth in claim 43 including the step of defining the portion of the apex bolster reference lines as extending between the intersection of the apex bolster reference lines and the first line and the intersection of the apex bolster reference lines and the second line.

45. A method as set forth in claim 44 including the step of creating an upper bolster line extending between the intersection of the outer upper contour lines and the upper horizontal contour.

46. A method as set forth in claim 45 including the step of creating upper bolster reference lines extending angularly forward from the intersection of the outer upper contour lines and the upper horizontal contour in a plane perpendicular to the upper bolster line and containing the upper horizontal contour.

47. A method as set forth in claim 46 further including the step of creating a third line parallel to the upper bolster line and spaced forwardly therefrom.

48. A method as set forth in claim 47 further including the step of shaping the upper bolster contours incorporating a portion of the upper bolster reference lines.

49. A method as set forth in claim 48 including the step of defining the portion of the upper bolster reference lines as extending between the intersection of the upper bolster line and the upper horizontal contour and the intersection of the upper bolster reference line and the third line.

50. A method as set forth in claim 49 including the step of shaping an overall bolster contour incorporating the apex and upper bolster contours thereby defining a surface of a portion of the two side bolsters.

51. A method as set forth in claim 50 including the step of incorporating the overall bolster contour into the shaping of the overall seatback contour.